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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,563	08/18/2003	Wei Li	50277-2249	4916

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HICKMAN PALERMO TRUONG & BECKER/ORACLE
2055 GATEWAY PLACE
SUITE 550
SAN JOSE, CA 95110-1089

EXAMINER

ALI, MOHAMMAD

ART UNIT	PAPER NUMBER
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2166

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/19/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/643,563

Applicant(s)

LI ET AL.

Examiner

Mohammad Ali

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 23-29 and 37-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 23-29 and 37-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 23-29 and 37-39 are pending in this office action.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 23 and 37 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 23 and 37 recites the limitation "determine whether".

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 23-29 and 37-39 are rejected under 35 U.S.C. 101 because claims 23-29 and 37-39 appear to encompass transmission media within their scope as evidenced by ¶ 143-145 of the specification. Thus, claims 23-29 and 37-39 are also rejected under 35 U.S.C. §101 as being directed to the non-statutory area of signals embodied on a transmission medium.

Claims that recite nothing but the physical characteristics of a form of energy, such as a frequency, voltage, or the strength of a magnetic field, define energy or

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magnetism, per se, and as such are nonstatutory natural phenomena. O'Reilly, 56 U.S. (15 How.) at 112-14. Moreover, it does not appear that a claim reciting a signal encoded with functional descriptive material falls within any of the categories of patentable subject matter set forth in § 101.

First, a claimed signal is clearly not a "process" under § 101 because it is not a series of steps. The other three § 101 classes of machine, compositions of matter and manufactures "relate to structural entities and can be grouped as 'product' claims in order to contrast them with process claims." 1 D. Chisum, Patents § 1.02 (1994). The three product classes have traditionally required physical structure or material.

"The term machine includes every mechanical device or combination of mechanical device or combination of mechanical powers and devices to perform some function and produce a certain effect or result." Corning v. Burden, 56 U.S. (15 How.) 252, 267 (1854). A modern definition of machine would no doubt include electronic devices which perform functions. Indeed, devices such as flip-flops and computers are referred to in computer science as sequential machines. A claimed signal has no physical structure, does not itself perform any useful, concrete and tangible result and, thus, does not fit within the definition of a machine.

A "composition of matter" "covers all compositions of two or more substances and includes all composite articles, whether they be results of chemical union, or of mechanical mixture, or whether they be gases, fluids, powders or solids." Shell Development Co. v. Watson, 149 F. Supp. 279, 280, 113 USPQ 265, 266 (D.D.C.

1957), *aff'd*, 252 F.2d 861, 116 USPQ 428 (D.C. Cir. 1958). A claimed signal is not matter, but a form of energy, and therefore is not a composition of matter.

The Supreme Court has read the term "manufacture" in accordance with its dictionary definition to mean "the production of articles for use from raw or prepared materials by giving to these materials new forms, qualities, properties, or combinations, whether by hand-labor or by machinery." *Diamond v. Chakrabarty*, 447 U.S. 303, 308, 206 USPQ 193, 196-97 (1980) (quoting *American Fruit Growers, Inc. v. Brogdex Co.*, 283 U.S. 1, 11, 8 USPQ 131, 133 (1931), which, in turn, quotes the Century Dictionary). Other courts have applied similar definitions. See *American Disappearing Bed Co. v. Arnaelsteen*, 182 F. 324, 325 (9th Cir. 1910), *cert. denied*, 220 U.S. 622 (1911). These definitions require physical substance, which a claimed signal does not have. Congress can be presumed to be aware of an administrative or judicial interpretation of a statute and to adopt that interpretation when it re-enacts a statute without change. *Lorillard v. Pons*, 434 U.S. 575, 580 (1978). Thus, Congress must be presumed to have been aware of the interpretation of manufacture in *American Fruit Growers* when it passed the 1952 Patent Act.

A manufacture is also defined as the residual class of product. 1 Chisum, § 1.02[3] (citing W. Robinson, *The Law of Patents for Useful Inventions* 270 (1890)). A product is a tangible physical article or object, some form of matter, which a signal is not. That the other two product classes, machine and composition of matter, require physical matter is evidence that a manufacture was also intended to require physical matter. A signal, a form of energy, does not fall within either of the two definitions of

manufacture. Thus, a signal does not fall within one of the four statutory classes of § 101.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 23, 29 and 37-39 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,324,533 (henceforth referred to as Agrawal et al.).

With respect to claim 23

Agrawal teaches a method comprising performing a machine-executed operation involving instructions (see Fig. 1), wherein the machine-executed operation is at least one of:

- A) sending said instructions over transmission media (see Figs. 1, 2, Agrawal);
- B) receiving said instructions over transmission media (see Figs. 1, 2, 6, Agrawal);
- C) Storing said instructions onto a machine-readable storage medium (see Figs. 1, 2, Agrawal); and
- D) executing the instructions (see col. 4, lines 39-46, Agrawal);

wherein said instructions are instructions which, when executed by one or more processors, cause the performance of a frequent itemset operation by performing (see col. 4, lines 39-46, Figs. 3, Agrawal) the steps of:

dynamically selecting which occurrence counting technique to use from a plurality of available occurrence counting techniques by performing the steps of:

generating cost estimates for each of the plurality of available occurrence counting techniques based on an estimated I/O cost of using the available occurrence counting technique (see col. 3, lines 19-21, Agrawal), and

selecting the occurrence counting technique that has the lowest estimated cost (see col. 12, lines 34-37, Agrawal); and

during said frequent itemset operation, using said selected occurrence counting technique to count occurrences of at least one combination to determine whether said at least one combination satisfies frequency criteria associated with said frequent itemset operation (see col. 3, lines 23-24, Figs. 3-6, Agrawal).

As to claim 29

Agrawal teaches wherein execution of said instructions by said one or more processors further causes: determining that a particular occurrence counting technique will not be considered during any phase of the frequent itemset operation (see Figs. 11, Agrawal); and

performing the frequent itemset operation without performing startup operations for said particular occurrence counting technique (see col. 3, lines 23-24, Figs. 3-6, Agrawal).

Claims 37-39 have the same subject matter as of claims above except workload computer system and Agrawal teaches at Fig. 1 and essentially rejected for the same reasons as discussed above.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 24-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Agrawal et al. and the paper *High Performance Mining of Maximal Frequent Itemsets* written by Grahne et al (henceforth referred to as Grahne).

As to claim 24

Agrawal teaches wherein the selected occurrence counting technique is a prefix tree technique (Figs. 10-12, Agrawal).

As to claim 25

Agrawal teaches wherein generating cost estimates for each of the plurality of available occurrence counting techniques based on an estimated I/O cost comprises: generating an I/O cost estimate for a prefix tree technique based, at least in part, on a size of the candidate prefix tree and an amount of memory that can be used to store the candidate prefix tree (see col. 8, lines 54-67, Figs. 8, 12, Agrawal).

As to claim 26

Agrawal teaches wherein the selected occurrence counting technique is a bitmap intersection technique (see col. 3, lines 19-21, Agrawal).

As to claim 27

Agrawal teaches wherein generating cost estimates for each of the plurality of available occurrence counting techniques based on an estimated I/O cost comprises: generating an I/O cost estimate for a bitmap intersection technique based, at least in part, on a cost of reading bitmaps for each frequent item (see col. 3, lines 19-21, Agrawal).

As to claim 28

Agrawal teaches wherein the plurality of available occurrence counting techniques include a bitmap intersection technique and a prefix tree technique (see col. 8, lines 54-67, Figs. 8, 11, 12, Agrawal).

As per Claims 24-28 are taught by Agrawal et al. as in claims 23 & 37. However, Agrawal et al. does not explicitly indicate that **bitmap intersection and a prefix tree technique**. However, Grahne teaches that **a bitmap intersection technique and a prefix tree technique** (Grahne: page 2, § 1 Introduction, ¶ 5; page 3, § 2.1 FP-Tree and FP-Growth Method, ¶ 2).

One of ordinary skill in the art at the time of invention would have recognized that the methods disclosed in Grahne comprise the details of a subset of the method taught by Agrawal et al. It would have been obvious to one of ordinary skill in the art at the time of invention to have combined the teachings of Agrawal et al. and Grahne because

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they are both focused on knowledge within the domain of data mining. Specifically, Grahne state on page 10 § 4 ¶ 1 that their "paper studies the performance of algorithms for mining frequent itemsets," which would clearly be of importance to the frequent itemset mining stage of the association rule mining method of Agrawal et al. Thus, it would have been obvious to one of ordinary skill in the art at the time of invention to have combined the teachings of Agrawal et al. and Grahne.

Information Disclosure Statement

8. Applicants' Information Disclosure Statements, filed on 1/27/2006, 10/17/2005, 8/17/2005, 1/3/2005, 12/2/2004, 10/22/2004, 10/8/2004 & 10/5/2004 have been received, entered into the record, and considered. See attached PTO-1449 forms.


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Contact Information

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammad Ali whose telephone number is (571) 272-4105. The examiner can normally be reached on Monday-Thursday (7:30 am-6:00 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain T. Alam can be reached on (571) 272-3978. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Mohammad Ali
Primary Examiner
Art Unit 2166

MA
April 13, 2007